WHAT IS CLAIMED IS:

1. A system for abstracting a legacy parallel memory interface between first and second devices, with the second device having on-board memory, said system comprising:

    a serial link coupling serial ports on the first and second devices;

    on the first device:

        a serial communication controller (SCC) for implementing a clear channel for transmitting and receiving serial data;

        a first controller programmed to implement a first messaging protocol for responding to messages from the second device and for sending messages including memory write, memory read, and open/close virtual channel connection messages;

    on the second device:

        a second controller programmed to implement a second messaging protocol for responding to messages from the first device and for sending messages forwarding designated data types to the first device

2. A system for transferring control and data information between a host and daughtercard, with the daughtercard providing the functionality of interfacing the host to a network, and with the daughtercard including memory, and with the daughtercard for processing and formatting network data received from the network and processing and formatting data received from the host prior to transmission on the network, said system comprising:

    a high bandwidth serial link coupling the host and daughtercard;

    on the host:

        a host serial communication controller for transmitting and receiving data over the serial link;

        a host processor programmed to implement a serial messaging protocol for transmitting commands and data to the daughtercard, over the serial link, including a write memory command that writes data to the memory on the daughtercard and a read memory command that identifies data to be read from the memory on the daughtercard;

    on the daughtercard:

17   a daughtercard serial interface for transmitting and receiving

18   data over the serial link;

19   a daughtercard protocol controller programmed to implement a

20   serial messaging protocol to respond to commands received from the host, including

21   responding to memory read and write commands and for forwarding formatted data received

22   from the network to the host.

1   3. The system of claim 2 where the daughtercard protocol controller is a field

2   programmable gate array (FPGA).

1   4. The system of claim 2 where the daughtercard protocol controller is an

2   application specific integrated circuit (ASIC).

1   5. The system of claim 2 wherein the host and daughtercard include parallel

2   interfaces, the system further comprising:

3   a legacy low-bandwidth parallel bus coupling the serial

4   interface of the host and daughtercard;

5   and with the host processor programmed to control registers on

6   the daughtercard via the parallel bus.

1   6. A method for accessing shared memory and transferring data between first

2   and second devices, with the second device including a memory for storing data, coupled by

3   a serial link comprising the steps of:

4   on the first device:

5   transmitting a read memory command to the second

6   device to request data stored on the memory of the second device;

7   transmitting a write memory command with data to be

8   stored in the memory of the second device;

9   transmitting control information to the second device;

10   on the second device:

11   transmitting formatted data to the first device.

1   7. The method of claim 6 further comprising the steps of:

2   on the first device:

3   including data structures in a write command to control

4   functionality of the second device.

1   8. A method for managing an intelligent daughtercard, with the daughtercard

2   including memory, by a host comprising the acts of:

3   providing a serial link between the host and daughtercard;

4   defining a plurality of serial protocol commands forming a

5   serial protocol enabling daughtercard management operations to be performed utilizing the

6   serial link;

7   specifying a command encapsulation format to encode the

8   plurality of commands to implement the serial protocol.

1   9. The method of claim 8 where the step of defining serial protocol

2   commands forming a serial protocol further comprises the steps of:

3   defining memory management serial protocol commands for

4   enabling the host to manage memory on-board the daughtercard; and

5   defining application dependent serial protocol for enabling the

6   host to initialize and/or change the configuration of the daughtercard.

1   10. The method of claim 9 where the step of defining memory management

2   serial commands further comprises the steps of:

3   defining memory management serial protocol commands for

4   initializing and/or updating data structures resident in daughtercard memory; and

5   defining memory management serial protocol commands to

6   manage and/or update packet buffers with network data.

1   11. The method of claim 10 where the step of defining application dependent

2   serial protocol commands includes the steps of:

3   defining application dependent serial command for

4   initialization and/or configuration of the daughtercard to correspond to user initiated

5   initialization and/or configuration changes performed by a user at the host.

1   12. A system for transferring control and data information between a host and

2   daughtercard, with the daughtercard providing the functionality of interfacing the host to a

3 network, and with the daughtercard including memory, and with the daughtercard for
4 processing and formatting network data received from the network and processing and
5 formatting data received from the host prior to transmission on the network, said system
6 comprising:

7   a high bandwidth serial link coupling the host and
8 daughtercard;

9   on the host:

10   a host serial communication controller for transmitting and
11 receiving data over the serial link;

12   a host processor programmed to implement serial protocol
13 commands for enabling daughtercard management operations to be performed by the host
14 utilizing the serial link;

15   on the daughtercard:

16   a daughtercard serial interface for transmitting and receiving
17 data over the serial link;

18   a daughtercard protocol controller programmed to implement a
19 serial protocol commands to provide information required by the host to manage the
20 daughtercard.

1   13. A system for managing an intelligent daughtercard, with the daughtercard
2 including memory, by a host comprising:

3   means for providing a serial link between the host and
4 daughtercard;

5   means for defining a plurality of serial protocol commands
6 forming a serial protocol enabling daughtercard management operations to be performed
7 utilizing the serial link;

8   means for specifying a command encapsulation format to
9 encode the plurality of commands to implement the serial protocol.

1   14. The system of claim 13 where the means for defining serial protocol
2 commands forming a serial protocol further:

3   means for defining memory management serial protocol
4 commands for enabling the host to manage memory on-board the daughtercard; and

12

5 means for defining application dependent serial protocol for

6 enabling the host to initialize and/or change the configuration of the daughtercard.

1 15. The system of claim 14 where the means for defining memory

2 management serial commands further comprises:

3 means for defining memory management serial protocol

4 commands for initializing and/or updating data structures resident in daughtercard memory;

5 and

6 means for defining memory management serial protocol

7 commands to manage and/or update packet buffers with network data.

1 16. The system of claim 15 where the step of defining application dependent

2 serial protocol commands comprises:

3 means for defining application dependent serial command for

4 initialization and/or configuration of the daughtercard to correspond to user initiated

5 initialization and/or configuration changes performed by a user at the host.

1 17. An apparatus for managing an intelligent daughtercard, with the

2 daughtercard including memory, by a host, with the apparatus including a serial link between

3 the host and daughtercard, and with the apparatus including a program storage device,

4 readable by the host and daughtercard, and tangibly embodying a program of instructions

5 executable by the host and daughtercard to perform method steps for managing the intelligent

6 daughtercard, the method comprising the acts of:

7 defining a plurality of serial protocol commands forming a

8 serial protocol enabling daughtercard management operations to be performed utilizing the

9 serial link;

10 specifying a command encapsulation format to encode the

11 plurality of commands to implement the serial protocol.